

IN THE CLAIMS

Listing of Claims

Claims 1-15: (Cancelled)

16. (New) An automatic system for the storage of samples comprising a lower chamber wherein a stack of disks independently rotatable around a vertical axis is arranged, said disks being provided with locations for storing the samples and with radial slots, an upper chamber above and separated from the lower chamber by means of a shelf fitted with an opening,

characterized by a Cartesian robotic system disposed in the upper chamber, which comprises a horizontal axis lying along a diameter of the stacked disks above the opening of the shelf and a vertical axis movable along the horizontal axis and along which a pick-up device can move into and out of the lower chamber for loading or unloading the samples wherein, when the pick-up device moves into and out of the lower chamber for loading or unloading the samples, the radial slots of the disks which are above a disk bearing the location of a chosen sample, are vertically aligned with the opening.

17. (New) System according to claim 16, wherein the lower chamber is a controlled temperature thermo-insulated chamber.

18. (New) System according to claim 16, wherein the shelf is a thermally insulated shelf.

19. (New) System according to claim 16, wherein the opening is a controlled access opening.

20. (New) System according to claim 16, wherein the opening has a length at least equivalent to the maximum radial distance between two samples on the same disk.

21. (New) System according to claim 16, wherein the radial slot has a length at least equivalent to the maximum radial distance between two samples on the same disk.

22. (New) System according to claim 16, comprising a skid movable along said horizontal axis for the horizontal movement of the pick-up device.

23. (New) System according to claim 16, wherein every disk of the stack is held by a group of three supports positioned at 120 degrees at the periphery of each single disk.

24. (New) System according to claim 16, wherein each single disk, and only one disk at a time, can be rotated by means of a device, which couples on the corresponding periphery of each disk.

25. (New) System according to claim 24, wherein a complex of toothed wheels always in contact on the peripheral toothing of the corresponding disks and of a engaging device integral with a motorized shaft which is suitably commanded places in rotation only one toothed wheel and thus the corresponding disk of the stack.

26. (New) System according to claim 16, wherein all the disks are held blocked by the "0" device with the slots aligned vertically, except for the disk whose rotation brings the location under said slots.

27. (New) System according to claim 16, wherein the disks blocking device is fitted with a sensor capable of monitoring the position of said blocking device and, at the same time, the position of "0" of each disk held blocked.

28. (New) System according to claim 16, wherein the disk of the stack that is placed in rotation by the device is monitored in its angular position by means of an encoder mounted on the motorized pulling shaft.

29. (New) System according to claim 16, wherein the chamber contains a device for identifying the samples in input to and output from the system.

30. (New) System according to claim 16, wherein the operations of inserting and extracting the samples from the system comes about by means of an I/O drawer that connects the external world with the chamber containing, amongst other things, the robotic device.

31. (New) System according to claim 16, wherein the access to the samples can come about only by means of the robotized system and that is, it cannot come about with manual type interventions.

32. (New) System according to claim 16, wherein the controlled-access opening on the thermally insulated panel is fitted with bodies that keep said opening closed so that the specific bodies open said opening only when the sample pick-up device passes.

33. (New) System according to claim 16, wherein the pick-up device of the sample is equipped with an optical sensor for monitoring the correct positioning of said pick-up device in relation to the location of the sample.

34. (New) System according to claim 16, wherein each mechanism for driving and access to the storage chamber is contained in the chamber permitting maintenance activity to be carried out on said devices without interfering with the controlled-temperature chamber.

35. (New) System according to claim 16, wherein the entire management of the devices of the system is controlled by an N/C system driven by a dedicated management SW.

36. (New) System according to claim 16, wherein the robotized system is controlled by an SW that records every operation set up by an operator and carried out by the system.